CLAIMS

1. A substrate transfer apparatus for a component mounting machine, for transferring a substrate into a mounting process (8) in which components are mounted onto the substrate and transferring the substrate from said mounting process (8), comprising:

a mounting-waiting process (7) for making the substrate to be transferred into the mounting process (8) wait before the mounting process (8); and

a substrate discharge-waiting process (9) for making the substrate after being transferred from the mounting process (8) wait before a following process, wherein:

transfer of an unmounted substrate (3) from said mounting-waiting process (7) to the mounting process (8) and transfer of a mounted substrate (2) for which mounting has been done in the mounting process (8) from the mounting process (8) to the substrate discharge-waiting process (9) are performed simultaneously,

characterized in that detecting means (6) are provided for detecting that a plurality of substrates have been transferred into the substrate discharge-waiting process (9) as part of the same transfer.

2. The substrate transfer apparatus for a components mounting machine according to claim 1, wherein the detecting means includes: a substrate-arrival detecting sensor (5c) for detecting the mounted substrate (2) transferred into the substrate discharge-waiting process (9); and a substrate-continuity detecting sensor (6), provided upstream of the substrate-arrival detecting sensor (5c), for detecting an unmounted substrate (3) being transferred at the same time as a mounted substrate (2).

3. The substrate transfer apparatus for a component mounting machine according to claim 2, wherein the

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substrate-continuity detecting sensor (6) is arranged at a position that satisfies X < XS < 2X, where a distance from the substrate-arrival detecting sensor (5c) to the substrate-continuity detecting sensor (6) is XS and a substrate dimension in the substrate transfer direction is X.

4. The substrate transfer apparatus for a component mounting machine according to claim 3, wherein the substrate-continuity detecting sensor (6) is arranged to be movable to the position that satisfies X < XS < 2X.

5. The substrate transfer apparatus for a component mounting machine according to claim 3, wherein the substrate-continuity detecting sensor (6) is constructed to be automatically movable to the position that satisfies X < XS < 2X, in accordance with the substrate dimension X in the substrate transfer direction.

6. The substrate transfer apparatus for a component mounting machine according to claim 1, wherein the detecting means includes: a substrate-arrival detecting sensor (5c) for detecting the mounted substrate (2) transferred into the substrate discharge-waiting process (9); and a plurality of substrate-continuity detecting sensors (6a, 6b, 6c), provided upstream of the substrate-arrival detecting sensor (5c) at different positions in a substrate transfer direction from one another, for detecting an unmounted substrate (3) being transferred at the same time as the mounted substrate (2).

7. The substrate transfer apparatus for a component mounting machine according to claim 6, wherein the substrate-continuity detecting sensors (6a, 6b, 6c) detect an unmounted substrate (3) by a substrate-detection state of one (6b) of the plurality of substrate-continuity detecting sensors (6a, 6b, 6c) that is located at a

position satisfying X < XS < 2X, where a distance from the substrate-arrival detecting sensor (5c) to the one substrate-continuity detecting sensor (6b) is XS and a substrate dimension in the substrate transfer direction is X.

8. The substrate transfer apparatus for a component mounting machine according to any one of claims 6 and 7, wherein the substrate transfer apparatus includes a minimum required number of the substrate-continuity detecting sensors (6a , 6b, 6c) by arranging N sensors that satisfy 2^N x P_min > P_max at positions determined by 2^n x P_min 2 (n = 1, 2, ..., N) from a minimum substrate size (P_min) and a maximum substrate size (P_max) in the substrate transfer direction, respectively, for which the electronic component mounting machine (1) is intended.